



# Desert Sky Observer

Volume 36

Antelope Valley Astronomy Club Newsletter

July 2016

## Up-Coming Events

- July 2: Dark Sky Star Party @ [Chuchupate](#)
- July 6: [Quarterly Board Meeting](#)
- July 8: Club Meeting\*
- July 23: [Prime Desert Moonwalk](#)

\* Monthly meetings are held at the S.A.G.E. Planetarium in Palmdale, the second Friday of each month. The meeting location is at the northeast corner of Avenue R and 20<sup>th</sup> Street East. Meetings start at 7 p.m. and are open to the public. *Please note that food and drink are not allowed in the planetarium*



## President Frank Moore

The Solstice has passed. Welcome to summer folks. We're on the backside of the year and the days will now start getting shorter.

As I'm writing this column, it's International SUNDAY and many groups throughout the world are holding outreach activities to share the sun with the public. Rose and I had plans to take some solar telescopes to one of the parks here in Tehachapi but, with the smoke from the Erskine Fire near Lake Isabella, the seeing is just terrible and we decided it just wasn't going to be worth the effort.

We had our monthly Moonwalk at Prime Desert Woodland Preserve on Saturday June 4. 181 members of the public were in attendance with four club members with telescopes supporting the event with SAGE Planetarium Director Jeremy Amarant. Rose and I were unable to attend due to my mom's hospitalization and I want to thank everyone who helped us out by supporting the event. The PDW Moonwalk for July will be held on July 23 at 8:30 pm. Come out, bring a scope, or go on the walk with Jeremy and get a tour of the current night sky and constellations.

Our Dark Sky Star Party for July will be held at the Chuchupate observing site near Frazier Park on Saturday July 2. An email with details has been sent to the membership. Hopefully, some of the wildfires throughout the region will have died down before then and the skies will be clear. Some of us will be going up as early as Friday July 1, and coming home on Sunday July 3, and others are planning on starting the weekend at Chuchupate and then making the short drive up to the even cooler and darker skies of Mount Pinos and staying through Monday July 4.

As has been noted in previous DSO's and at meetings, our annual Star-B-Que will be held at the Brite Lake Recreation area near Tehachapi on Saturday August 6. Emails with details will be sent out to the membership. Please RSVP so we know how many to plan for and consider what you might have for raffles and silent auctions. Also, save Saturday December 3 on your calendars as we have reserved the banquet room at Domingo's on Ave I in Lancaster for our Christmas Party on that date.

The AVAC Executive Board will be having our Quarterly Meeting at Camille's Sidewalk Café at 44140 20th St W in Lancaster at 6:30 pm on Wednesday July 6. The board meetings are always open to the

membership and we welcome your attendance. As noted at the last meeting, we're looking for some ideas in regard to outreach and educational initiatives and we welcome your input in that regard. Come on out and put in your two cent's worth or just hang out with us and have a snack.

Rose has sent out emails concerning the Mount Wilson trip on Saturday September 23 and payment information for those who have signed up. Please confirm your reservation ASAP so we can notify those on the standby list if you are unable to make it.



## **Secretary**

### **Rose Moore**

Just a reminder for those signed up, that payment for the Mt. Wilson trip is due before August 1st. We are scheduled for Friday, September 23rd. You may pay by the Paypal link: <http://avastronomyclub.org/mtwilson.html>, you may pay Treasurer Virginia by cash or check at our next club meeting on Friday July 8th, or you may pay by mailing a check made out to 'AVAC' at our PO box: AVAC, P.O. Box 8545, Lancaster, CA 93539. The cost is \$30 per person. We will be carpooling from the Park and Ride at the 14 and Sierra Hwy. Further info to follow. If you are not able to attend, please let me know asap, as we still have people on the standby list.

Also on the calendar is a Board meeting at Camille's Cafe in Lancaster on Wednesday, July 6th at 6:30pm. Any club member is welcome to attend this meeting. A Prime Desert Moon Walk is scheduled on Saturday July 23rd, at 8:30pm, weather permitting.

Our club picnic is on Saturday, August 6th at Brite Lake, Tehachapi! There will be a bar-b-que that afternoon starting at 4 pm, followed by a public star party that evening. Frank or I will be sending out a club email about the picnic. There will be a potluck sign up sheet at our next meeting. You are not obligated to bring anything to the picnic. The club will provide the meat, buns, drinks, charcoal, and some other items. We will be having a raffle and silent auction, so if there are any items you would like to donate, please bring it to the picnic that day. They can be astronomy related items or other fun items! I will be providing the sign-up sheets.

See you there!

## Space Place

## Hubble's bubble lights up the interstellar rubble

By Ethan Siegel

When isolated stars like our Sun reach the end of their lives, they're expected to blow off their outer layers in a roughly spherical configuration: a planetary nebula. But the most spectacular bubbles don't come from gas-and-plasma getting expelled into otherwise empty space, but from young, hot stars whose radiation pushes against the gaseous nebulae in which they were born. While most of our Sun's energy is found in the visible part of the spectrum, more massive stars burn at hotter temperatures, producing more ionizing, ultraviolet light, and also at higher luminosities. A star some 40-45 times the mass of the Sun, for example, might emit energy at a rate hundreds of thousands of times as great as our own star.



*Image credit: NASA, ESA, and the Hubble Heritage Team (STScI/AURA), of the Bubble Nebula as imaged 229 years after its discovery by William Herschel.*

The star itself at the core of the nebula is currently fusing helium at its center. It is expected to live only another 10 million years or so before dying in a spectacular Type II supernova explosion.

The Bubble Nebula, discovered in 1787 by William Herschel, is perhaps the classic example of this phenomenon. At a distance of 7,100 light years away in the constellation of Cassiopeia, a molecular gas cloud is actively forming stars, including the massive O-class star BD+60 2522, which itself is a magnitude +8.7 star despite its great distance and its presence in a dusty region of space. Shining with a temperature of 37,500 K and a luminosity nearly 400,000 times that of our Sun, it ionizes and evaporates off all the molecular material within a sphere 7 light years in diameter. The bubble structure itself, when viewed from a dark sky location, can be seen through an amateur telescope with an aperture as small as 8" (20 cm).

As viewed by Hubble, the thickness of the bubble wall is both apparent and spectacular. A star as massive as the one creating this bubble emits stellar winds at approximately 1700 km/s, or 0.6% the

## News Headlines

### **Unexpected Mineral Discovered On Mars**

Scientists have discovered an unexpected mineral in a rock sample at Gale Crater on Mars, a finding that may alter our understanding of how the planet evolved.

NASA's Mars Science Laboratory rover, Curiosity, has been exploring sedimentary rocks within Gale Crater since landing in August 2012. In July 2015, on Sol 1060 (the number of Martian days since landing), the rover collected powder drilled from rock at a location named "Buckskin." Analyzing data from an X-ray diffraction instrument on the rover that identifies minerals, scientists detected significant amounts of a silica mineral called tridymite.

<http://spaceref.com/mars/unexpected-mineral-discovered-on-mars.html>

### **Mystery Object Outshines Entire Milky Way Galaxy by 50 Times**

If, as they suspect, the gas ball is the result of a supernova, then it's the most powerful supernova ever seen. In June of 2015, astronomers viewed a ball of hot gas billions of light years away that is radiating the energy of hundreds of billions of suns....

....The team reported that the object at the center could be a very rare type of star called a magnetar--but one so powerful that it pushes the energy limits allowed by physics. An international team of professional and amateur astronomers spotted the possible supernova, now called ASASSN-15lh, when it first flared to life in June 2015.

<http://goo.gl/e73RjP>

### **Small Asteroid Is Earth's Constant Companion**

A small asteroid has been discovered in an orbit around the sun that keeps it as a constant companion of Earth, and it will remain so for centuries to come.

As it orbits the sun, this new asteroid, designated 2016 HO3, appears to circle around Earth as well. It is too distant to be considered a true satellite of our planet, but it is the best and most stable example to date of a near-Earth companion, or "quasi-satellite."

<http://www.jpl.nasa.gov/news/news.php?release=2016-154>

### **NASA's Juno Spacecraft to Risk Jupiter's Fireworks for Science**

On July 4, NASA will fly a solar-powered spacecraft the size of a basketball court within 2,900 miles (4,667 kilometers) of the cloud tops of our solar system's largest planet.

"Over the life of the mission, Juno will be exposed to the equivalent of over 100 million dental X-rays,"

<https://goo.gl/r11Ic4>

## July Sky Data

**Best time for deep sky observing this month:**  
**July 1 thru 5 and 27 thru 31**

**Mercury** passes behind the Sun on July 6th, but may become visible in binoculars about mid month when it sets about 45 minutes after sunset as it lies just half a degree above Venus. During July's final week it will be seen to the upper left of Venus and moves closer to Regulus, in Leo, until the two close to just 22 arc minutes on the evening of July 30th.

**Venus**, having passed behind the Sun on June 6th becomes visible in mid month low in the west-northwest shining at magnitude -3.9 in Gemini. It passes to the lower left of Pollux on the 13th and passes through the Beehive Cluster, M44, in Cancer on the 20th, ending the month 5 degrees to the west of Regulus in Leo.

**Mars** can be seen in the south-southwest after sunset above and to the right of Antares. It fades from magnitude -1.4 to -0.8 while its disk shrinks from 16 to 13 arc seconds. Mars is due south - and so highest in the sky - at ~9:30 on the first of July, and even though its elevation is only then about 19 degrees, a medium sized telescope may still be able to see details on the surface such as the polar caps and Syrtis Major.

Seen low in the western sky after sunset, **Jupiter** is shining at magnitude -1.9 at the start of the month and has an angular diameter of 34.3 arc seconds. By month's end, these have reduced slightly to -1.8 and 32.1 arc seconds. One hour after sunset it will be about 30 degrees above the horizon.

**Saturn**, having been in opposition on June 3rd, lies some 6 degrees north of Antares. Its brightness drops a little, from magnitude +0.2 to magnitude +0.4 while its apparent diameter falls from 18.2 to 17.6 arc seconds. Though only at an elevation of 20 degrees when due south the beautiful ring system, now at an inclination of 26 degrees is still worth observing.

There are various minor **meteor-showers** which are active in July, mainly with radiants in the Capricorn-Aquarius area.

New Jul 4      First Qtr Jul 11      Full Jul 19      Last Qtr Jul 26



## Sun and Moon Rise and Set

Date	Moonrise	Moonset	Sunrise	Sunset
7/1/2016	04:21	18:24	06:42	21:08
7/5/2016	08:08	22:10	06:44	21:08
7/10/2016	12:58	-----	06:47	21:06
7/15/2016	17:27	03:28	06:50	21:04
7/20/2016	21:36	07:40	06:53	21:02
7/25/2016	00:54	12:57	06:57	20:59
7/31/2016	04:54	19:11	07:01	20:54

## Planet Data

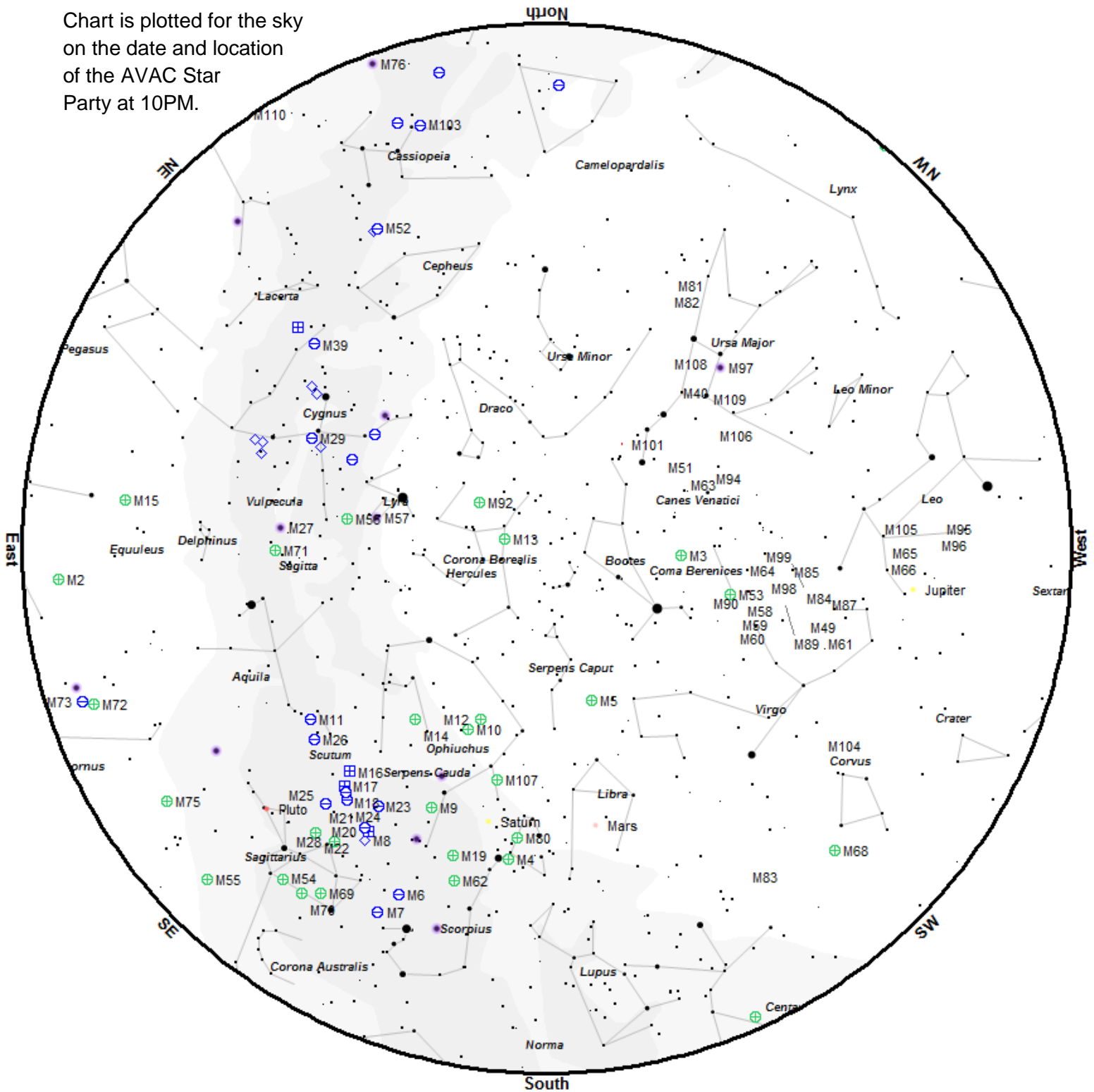
	Jul 1			
	Rise	Transit	Set	Mag
<b>Mercury</b>	05:10	12:27	19:50	-1.7
<b>Venus</b>	06:08	13:25	20:44	-3.9
<b>Mars</b>	16:23	21:29	02:35	-1.4
<b>Jupiter</b>	10:57	17:24	23:48	-1.9
<b>Saturn</b>	17:39	22:48	03:56	0.2

	Jul 15			
	Rise	Transit	Set	Mag
<b>Mercury</b>	06:34	13:41	20:52	-1.1
<b>Venus</b>	06:36	13:43	20:52	-3.9
<b>Mars</b>	15:36	20:40	01:45	-1.1
<b>Jupiter</b>	10:12	16:37	22:59	-1.8
<b>Saturn</b>	16:41	21:50	02:58	0.3

	Jul 31			
	Rise	Transit	Set	Mag
<b>Mercury</b>	07:50	14:27	21:08	-0.1
<b>Venus</b>	07:10	13:59	20:50	-3.9
<b>Mars</b>	14:56	19:57	00:57	-0.8
<b>Jupiter</b>	09:22	15:44	22:03	-1.8
<b>Saturn</b>	15:36	20:45	01:53	0.4

Planet, Sun, and Moon data calculated for local time at Lancaster, CA

Chart is plotted for the sky on the date and location of the AVAC Star Party at 10PM.



<p>Star Magnitudes</p> <p>● 0 ● 1 ● 2 ● 3 ● 4 ● 5</p>	<p>○ Galaxy</p> <p>⊕ Open Cluster</p> <p>⊕ Globular Cluster</p> <p>⊕ Cluster+Nebulosity</p>	<p>◇ Nebula</p> <p>◇ Bright Nebula</p> <p>◇ Planetary Nebula</p>
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To use the chart, go outside within an hour or so of the time listed and hold it up to the sky. Turn the chart so the direction you are looking is at the bottom of the chart. If you are looking to the south then have 'South horizon' at the lower edge.

## Suggested Observing List

The list below contains objects that will be visible on the night of the AVAC Star Party. The list is sorted by the best time to observe the object. The difficulty column describes how difficult it is to observe the object from the current location on a perfect night in a 6 inch Newtonian telescope.

ID	Cls	Con	RA 2000	Dec 2000	Mag	Begin	Best	End	Difficulty
NGC 5139	Glob	Cen	13h26m46.0s	-47°28'36"	3.9	21:27	21:33	21:40	detectable
NGC 5128	Gal	Cen	13h25m27.7s	-43°01'07"	7.8	21:22	21:39	22:10	challenging
NGC 5460	Open	Cen	14h07m27.0s	-48°20'36"	6.1	21:21	21:39	22:10	challenging
M 68	Glob	Hya	12h39m28.0s	-26°44'36"	7.3	21:31	21:45	22:12	detectable
M 83	Gal	Hya	13h37m00.8s	-29°51'56"	7.8	21:30	21:49	22:43	detectable
M 104	Gal	Vir	12h39m59.3s	-11°37'22"	9.1	21:32	21:51	22:41	detectable
M 49	Gal	Vir	12h29m46.8s	+08°00'01"	9.3	21:33	21:55	22:39	detectable
M 86	Gal	Vir	12h26m12.2s	+12°56'44"	9.8	21:36	21:56	22:47	detectable
M 84	Gal	Vir	12h25m03.9s	+12°53'12"	10.1	21:34	21:56	22:45	detectable
M 87	Gal	Vir	12h30m49.2s	+12°23'29"	9.6	21:34	21:56	22:51	detectable
NGC 4565	Gal	Com	12h36m20.8s	+25°59'15"	10.1	21:36	21:57	23:08	detectable
Coll 256	Open	Com	12h25m06.0s	+26°06'00"	2.9	21:31	21:58	23:16	easy
M 64	Gal	Com	12h56m43.8s	+21°41'00"	9.3	21:33	21:58	23:36	detectable
M 97	PNe	UMa	11h14m47.7s	+55°01'09"	9.7	21:37	22:00	22:59	detectable
M 106	Gal	CVn	12h18m57.6s	+47°18'13"	9.1	21:37	22:00	23:38	detectable
M 94	Gal	CVn	12h50m53.1s	+41°07'12"	8.7	21:33	22:00	00:08	easy
M 82	Gal	UMa	09h55m52.4s	+69°40'47"	9.0	21:36	22:01	22:15	detectable
M 81	Gal	UMa	09h55m33.1s	+69°03'56"	7.8	21:36	22:01	22:13	detectable
M 3	Glob	CVn	13h42m11.0s	+28°22'42"	6.3	21:32	22:01	00:30	easy
NGC 5195	Gal	CVn	13h29m59.6s	+47°15'58"	10.5	21:35	22:02	00:20	detectable
M 51	Gal	CVn	13h29m52.3s	+47°11'40"	8.7	21:31	22:02	00:56	easy
NGC 5897	Glob	Lib	15h17m24.0s	-21°00'36"	8.4	21:36	22:03	23:21	difficult
M 101	Gal	UMa	14h03m12.4s	+54°20'53"	8.4	21:36	22:06	00:50	detectable
M 5	Glob	Ser	15h18m34.0s	+02°05'00"	5.7	21:30	22:06	01:09	easy
NGC 5986	Glob	Lup	15h46m03.0s	-37°47'12"	7.6	21:34	22:06	23:39	detectable
M 80	Glob	Sco	16h17m02.0s	-22°58'30"	7.3	21:31	22:29	00:01	detectable
NGC 6124	Open	Sco	16h25m20.0s	-40°39'12"	6.3	21:41	22:37	23:51	challenging
NGC 6167	Open	Nor	16h34m34.0s	-49°46'18"	6.6	21:43	22:45	23:52	detectable
NGC 6178	Open	Sco	16h35m47.0s	-45°38'36"	7.2	21:33	22:47	00:23	easy
NGC 6193	Open	Ara	16h41m20.0s	-48°45'48"	5.4	21:42	22:52	00:08	detectable
M 13	Glob	Her	16h41m41.0s	+36°27'36"	5.8	21:29	22:53	03:37	easy
M 12	Glob	Oph	16h47m14.0s	-01°56'48"	6.1	21:29	22:58	02:26	easy
M 10	Glob	Oph	16h57m09.0s	-04°06'00"	6.6	21:34	23:08	02:19	detectable
M 62	Glob	Oph	17h01m13.0s	-30°06'48"	6.4	21:34	23:13	01:36	detectable
M 19	Glob	Oph	17h02m38.0s	-26°16'06"	6.8	22:28	23:14	23:59	detectable
M 92	Glob	Her	17h17m07.0s	+43°08'12"	6.5	21:32	23:27	04:11	easy
NGC 6322	Open	Sco	17h18m25.0s	-42°56'00"	6.5	21:35	23:29	01:32	easy
M 9	Glob	Oph	17h19m12.0s	-18°31'00"	7.8	21:38	23:30	01:40	detectable

ID	Cls	Con	RA 2000	Dec 2000	Mag	Begin	Best	End	Difficulty
NGC 6383	Open	Sco	17h34m48.0s	-32°34'00"	5.4	21:36	23:46	02:19	easy
NGC 6388	Glob	Sco	17h36m17.0s	-44°44'06"	6.8	22:25	23:47	01:10	detectable
M 14	Glob	Oph	17h37m36.0s	-03°14'48"	7.6	21:36	23:49	02:55	detectable
M 6	Open	Sco	17h40m20.0s	-32°15'12"	4.6	21:33	23:51	02:37	easy
IC 4665	Open	Oph	17h46m18.0s	+05°43'00"	5.3	21:39	23:57	03:05	detectable
M 7	Open	Sco	17h53m51.0s	-34°47'36"	3.3	21:45	00:04	02:30	easy
M 23	Open	Sgr	17h57m04.0s	-18°59'06"	5.9	21:59	00:08	02:14	detectable
NGC 6543	PNe	Dra	17h58m33.4s	+66°37'59"	8.3	21:22	00:08	04:37	obvious
M 20	Open	Sgr	18h02m42.0s	-22°58'18"	5.2	22:38	00:13	01:48	easy
M 8	Neb	Sgr	18h04m02.0s	-24°23'14"	5.0	22:56	00:14	01:32	easy
M 21	Open	Sgr	18h04m13.0s	-22°29'24"	7.2	22:37	00:15	01:54	detectable
NGC 6541	Glob	CrA	18h08m02.0s	-43°42'54"	6.3	22:56	00:19	01:43	detectable
NGC 6572	PNe	Oph	18h12m06.4s	+06°51'12"	8.0	21:18	00:22	04:16	obvious
M 16	Open	Ser	18h18m48.0s	-13°48'24"	6.5	21:51	00:29	03:08	obvious
M 18	Open	Sgr	18h19m58.0s	-17°06'06"	7.5	22:11	00:31	02:50	easy
M 17	Open	Sgr	18h20m47.0s	-16°10'18"	7.3	22:08	00:31	02:55	detectable
M 28	Glob	Sgr	18h24m33.0s	-24°52'12"	6.9	23:25	00:35	01:47	detectable
NGC 6633	Open	Oph	18h27m15.0s	+06°30'30"	5.6	21:32	00:37	04:23	easy
M 25	Open	Sgr	18h31m47.0s	-19°07'00"	6.2	22:36	00:43	02:49	detectable
M 22	Glob	Sgr	18h36m24.0s	-23°54'12"	5.2	23:24	00:47	02:10	detectable
IC 4756	Open	Ser	18h39m00.0s	+05°27'00"	5.4	21:39	00:49	04:16	easy
M 70	Glob	Sgr	18h43m13.0s	-32°17'30"	7.8	22:47	00:54	03:00	detectable
M 11	Open	Sct	18h51m05.0s	-06°16'12"	6.1	21:53	01:01	04:10	detectable
NGC 6716	Open	Sgr	18h54m34.0s	-19°54'06"	7.5	23:04	01:05	03:06	detectable
M 54	Glob	Sgr	18h55m03.0s	-30°28'42"	7.7	23:08	01:06	03:03	difficult
NGC 6723	Glob	Sgr	18h59m33.0s	-36°37'54"	6.8	23:14	01:10	03:05	detectable
M 57	PNe	Lyr	18h53m35.1s	+33°01'45"	9.4	21:31	01:10	04:29	easy
M 56	Glob	Lyr	19h16m36.0s	+30°11'06"	8.4	21:54	01:27	04:22	detectable
M 55	Glob	Sgr	19h40m00.0s	-30°57'42"	6.3	23:36	01:50	04:02	detectable
NGC 6818	PNe	Sgr	19h43m57.8s	-14°09'12"	10.0	23:18	01:54	04:31	easy
M 71	Glob	Sge	19h53m46.0s	+18°46'42"	8.4	21:52	02:04	04:31	easy
M 27	PNe	Vul	19h59m36.3s	+22°43'16"	7.3	21:54	02:10	04:31	easy
NGC 6871	Open	Cyg	20h05m59.0s	+35°46'36"	5.8	21:47	02:16	04:30	easy
NGC 6910	Open	Cyg	20h23m12.0s	+40°46'42"	7.3	21:49	02:33	04:32	easy
M 29	Open	Cyg	20h23m57.0s	+38°30'30"	7.5	21:55	02:33	04:30	easy
NGC 7009	PNe	Aqr	21h04m10.9s	-11°21'48"	8.3	00:22	03:14	04:41	obvious
M 39	Open	Cyg	21h31m48.0s	+48°26'00"	5.3	22:20	03:36	04:33	easy
M 15	Glob	Peg	21h29m58.0s	+12°10'00"	6.3	23:46	03:36	04:31	easy
IC 1396	Neb	Cep	21h39m06.0s	+57°30'00"		22:24	03:38	04:30	challenging
M 2	Glob	Aqr	21h33m27.0s	-00°49'24"	6.6	00:16	03:39	04:31	detectable
NGC 7160	Open	Cep	21h53m40.0s	+62°36'12"	6.4	22:13	03:42	04:36	obvious
IC 5146	Neb	Cyg	21h53m24.0s	+47°16'00"	10.0	22:53	03:45	04:33	challenging
NGC 7243	Open	Lac	22h15m08.0s	+49°53'54"	6.7	23:54	03:50	04:28	detectable
M 52	Open	Cas	23h24m48.0s	+61°35'36"	8.2	01:01	03:54	04:25	detectable
NGC 7790	Open	Cas	23h58m24.0s	+61°12'30"	7.2	00:22	03:57	04:33	obvious



## A.V.A.C. Information

Membership in the Antelope Valley Astronomy Club is open to any individual or family.

The Club has three categories of membership.

- Family membership at \$30.00 per year.
- Individual membership at \$25.00 per year.
- Junior membership at \$15.00 per year.

Membership entitles you to...

- Desert Sky Observer—monthly newsletter.
- The Reflector – the publication of the Astronomical League.
- The A.V.A.C. Membership Manual.
- To borrow club equipment, books, videos and other items.

### AVAC

**P.O. BOX 8545,  
LANCASTER, CA 93539-8545**

Visit the Antelope Valley Astronomy Club website at [www.avastronomyclub.org/](http://www.avastronomyclub.org/)

The Antelope Valley Astronomy Club, Inc. is a 501(c)(3) Non-Profit Corporation.

The A.V.A.C. is a Sustaining Member of The Astronomical League and the International Dark-Sky Association.

## Board Members

### President:

Frank Moore (661) 972-4775  
[president@avastronomyclub.org](mailto:president@avastronomyclub.org)

### Vice-President:

Bill Schebeck (661) 233-5123  
[vice-president@avastronomyclub.org](mailto:vice-president@avastronomyclub.org)

### Secretary:

Rose Moore (661) 972-1953  
[secretary@avastronomyclub.org](mailto:secretary@avastronomyclub.org)

### Treasurer:

Virginia Reed (661) 824-3932  
[treasurer@avastronomyclub.org](mailto:treasurer@avastronomyclub.org)

### Director of Community Development:

Robert Lynch, Jr.  
[community@avastronomyclub.org](mailto:community@avastronomyclub.org)

## Appointed Positions

### Newsletter Editor:

Steve Trotta (661) 269-5428  
[dso@avastronomyclub.org](mailto:dso@avastronomyclub.org)

### Equipment & Library:

Bill Grove  
[library@avastronomyclub.org](mailto:library@avastronomyclub.org)

### Club Historian:

Tom Koonce (661) 943-8200  
[history@avastronomyclub.org](mailto:history@avastronomyclub.org)

### Webmaster:

Steve Trotta (661) 269-5428  
[webmaster@avastronomyclub.org](mailto:webmaster@avastronomyclub.org)

### Astronomical League Coordinator:

Don Bryden (661) 270-0627  
[al@avastronomyclub.org](mailto:al@avastronomyclub.org)

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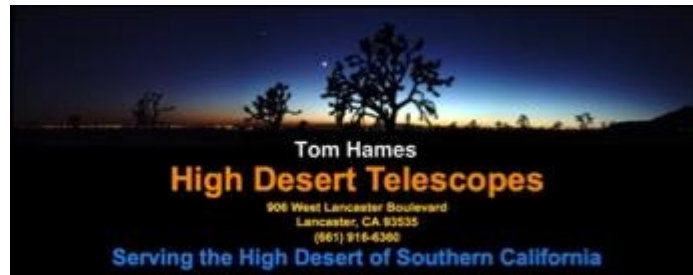


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